What do we ask kids to do and know?

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| Grade | What the curriculum asks them to do | What we want them to know |
| 1 | •divide whole objects into equal sized parts and use fraction words | *-Sometimes we want to tell how much there is when there is less than a whole. There are words for that.* |
| 2 | • determine relationship between number of fraction parts and size (investigate)  • regroup fractional parts in wholes (concrete)  • compare using concrete materials (no notation) | *-When you divide the same thing into more parts, the parts are smaller.*  *-If you can divide a whole into many equal parts, you could put the parts together again to make the whole.*  *-If you want to know which part is more, sometimes you can just look; other times, you can overlap the parts to tell.* |
| 3 | • divide whole objects AND SETS into equal parts and use fraction names (not notation) | *-Not only can you divide measures like length, capacity, mass, or area into equal parts, you can think of a group of objects as a single whole.*  *-Although we usually think about creating equal groups as dividing, we can also think about it fractionally.* |
| 4 | • represent fractions using concrete materials, words, and standard fractional notation, meaning of denominator and numerator  • compare and order fractions considering size and number of parts  • compare fractions using benchmarks  • demonstrate and explain the relationship between equivalent fractions, using concretes  • count forwards by halves, thirds, fourths, and tenths beyond one | *- The numerator and denominator of a fraction tell you different things about the fraction.*  *- You need to know what the whole is to interpret or compare fractions.*  *- The same object(s) can represent different fractions, depending on what the whole is.*  *- There are many ways to represent any given fraction.*  *- There is always more than one strategy for comparing fractions, but for particular fractions, one strategy might be easier to use than another. Many of the strategies involve renaming fractions.*  *- Every fraction has more than one name. If you are using the same whole, then you can tell whether two fractions are identifying the same amount by overlapping the two representations.*  *- It might be helpful to think of a fraction like a/b as a sets of 1/b. You can then count by 1/b s to get a sense of how big a/b is.* |
| 5 | • represent, compare, and order with like denominators including improper and mixed numbers using tools  • demonstrate and explain the concept of equivalent fractions using concretes  • describe multiplicative relationships between quantities by using simple fractions  (fractions for probabilities) | *- There are fractions that are not parts of wholes. These fractions might be a different name for a whole or they might represent an amount between two wholes.*  *-There are a number of benchmarks that can be of use when comparing fractions, particularly when some fractions are greater than 1.*  *- Mixed number representations of fractions greater than 1 usually give a better sense of the size of the fraction than improper fraction representations.*  *- There is always more than one strategy for comparing fractions, but for particular fractions, one strategy might be easier to use than another.*  *- Every fraction has more than one name. If you are using the same whole, then you can tell whether two fractions are identifying the same amount by overlapping the two representations.*  *- Fractions are used as a way to compare measures or sets. For example, we might say that one set or one length is 2/3 as long as another set or length.* |
| 6 | • represent, compare, order with unlike denominators- proper, improper, mixed  • represent ratios using concretes, pictorial and standard fractional notation  (fractions for probabilities) | *- There is always more than one strategy for comparing fractions, but for particular fractions, one strategy might be easier to use than another.*  *- Ratios used to compare parts of sets to the whole set can be represented as fractions of sets, but fractions are also useful to compare parts of sets to each other.* |
| 7 | • represent, compare and order fractions    • divide whole numbers by simple fractions  • use a variety of mental strategies to solve problems involving + and – of fractions | *- There is always more than one strategy for comparing fractions, but for particular fractions, one strategy might be easier to use than another.*  *- A non- unit fraction can be interpreted as a quotient. Knowing this might help someone figure out the decimal form of a fraction.*  *- Dividing a number by a fraction involves finding how many of that fraction makes the other number.*  *- Adding and subtracting fractions only involves “counting” if the denominators are the same, but is more complicated if they are not.*  *- Adding and subtracting hold the same meaning for fractions as for whole numbers.*  *- Adding and subtracting fractions often involves renaming them to make the calculation easier.*  *- There are always many strategies for calculating with fractions.* |
| 8 | • represent, compare and order rational numbers  • translate between equivalent forms of a number  • use estimation with solving operations with … fractions  • represent the multiplication and division of fractions, using variety of tools  • solve problems involving +, -, x and ÷ with simple fractions  • solve problems involving proportions using concretes, pictorials and variables | *- There is always more than one strategy for comparing fractions, but for particular fractions, one strategy might be easier to use than another.*  *- One way to compare fractions is to compare the numerator to the denominator.*  *- A non- unit fraction can be interpreted as a quotient. Knowing this might help someone figure out the decimal form of a fraction.*  *- Multiplying a number other than 1 by a fraction is equivalent to changing the whole before you interpret the fraction (e.g. 2/3 x ½ means make the ½ the new whole before you take 2/3 of it.)*  *- Dividing by a fraction involves finding how many of that fraction makes the other number.*  *- Each operation with fractions holds the same meaning as it did before; knowing this can inform estimating and calculation with those fractions.*  *- A proportion is a statement that two fractions are equivalent.*  *- There are always many strategies for calculating with fractions.* |
| 9 | • simplify numerical expressions involving rational numbers and… | *- Each operation with fractions holds the same meaning as it did before; knowing this can inform estimating and calculation with those fractions.*  *- There are always many strategies for calculating with fractions.* |